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RICHARD AUCHTERLONIE NOVAK DRUCE & QUIGG, LLP 1000 LOUISIANA SUITE 5320 HOUSTON, TX 77002			EXAMINER WILSON, YOLANDA L	
			ART UNIT 2113	PAPER NUMBER

DATE MAILED: 03/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/603,951

Applicant(s)

ARMANGAU ET AL.

Examiner

Yolanda L. Wilson

Art Unit

2113

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 8-10 and 26-28 is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-6, 11-15, 19, 20, 22-24 and 29-33 is/are rejected.
- 7) ☒ Claim(s) 3, 7, 16-18, 21, 25 and 34-36 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 05/11/04;06/25/03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 12,15-18 are objected to because of the following informalities: Claims 12,15-18 include the following phrase 'which includes' should be 'which further includes'. Appropriate correction is required.
2. Claims 3,7,16-18,21,25,34-36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Allowable Subject Matter***

3. Claims 8-10,26-28 are allowed.
4. The following is a statement of reasons for the indication of allowable subject matter: The primary reason for the allowance of claim 8-10 and 26-28 is the inclusion of the limitation "making a first snapshot copy of the secondary file system at the beginning of read/write access to the secondary file system and keeping a record of changes made to the secondary file system during the read/write access to the secondary file system...when the primary site becomes operative, making a second snapshot copy of the secondary file system...using the first snapshot copy to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun, and then writing into the primary file system the changes made to the secondary file system during the read/write access to the

secondary file system between the time of the first snapshot copy and the second snapshot copy.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1, 4, 11-15, 19, 22, 29-33 are rejected under 35 U.S.C. 102(e) as being anticipated by Leach et al. (USPN 6694447 B1). As per claim 1, Leach et al. discloses in response to the primary site becoming inoperative during read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system, beginning read/write access to the secondary file system, making a snapshot copy of the secondary file system at the beginning of read/write access to the secondary file system, and keeping a record of changes made to the secondary file system during the read/write access to the secondary file system in column 6, line 61 – column 7, line 5.

Leach et al. also discloses thereafter, when the primary site becomes operative, using the snapshot copy to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun,

and then writing into the primary file system the changes made to the secondary file system during the read/write access to the secondary file system; and terminating read/write access to the secondary file system, and once the changes made to the secondary file system have been written into the primary file system, restarting read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system in column 7, lines 39-67. The asynchronous remote copy of changes is the point-in-time image. The servers and databases disclosed in Figure 5A are also inclusive of file systems as discloses in column 7, lines 32-38.

7. As per claim 4, Leach et al. discloses wherein the state of the secondary file system existing when read/write access of the secondary file system was begun is a prior state of the primary file system existing before the primary site became inoperative, and the method includes the primary site keeping a list of blocks that have been changed in the primary file system during read/write access to the primary file system, and the snapshot copy is used to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun by accessing the list of blocks that have been changed in the primary file system during the read/write access to the primary file system to determine the blocks that have been changed in the primary file system since said prior state of the primary file system, and copying from the snapshot copy to the primary file system the blocks that have been changed in the primary file system since said prior state of the primary file system in column 6, lines 33-43 and column 7, lines 39-67. The other techniques are

inclusive of those that store the updates to the primary site and then replicate to the secondary site.

8. As per claim 11, Leach et al. discloses accessing the list of the data blocks that have been changed in the primary file system to restore the primary file system to a prior state at a restart point, the prior state at the restart point including changes made to the primary file system that have been transmitted to the secondary site, the primary file system being restored by determining from the list the data blocks that have been changed in the primary file system since the restart point, and obtaining from the secondary site the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point, and writing into the primary file system the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point in column 6, lines 33-43 and column 7, lines 39-67. The other techniques are inclusive of those that store the updates to the primary site and then replicate to the secondary site.

Additionally, a comparison is already being done in Leach et al. to figure out which data is update to date.

9. As per claim 12, Leach et al. discloses which [further] includes the secondary site responding to the disruption by making a snapshot copy of the secondary file system at the restart point once all of the changes to the primary file system that have been transmitted to the secondary file system have been written into the secondary file system, and wherein the data existing at the time of the restart point in the data blocks

that have been changed in the primary file system since the restart point are obtained from the snapshot copy at secondary site in column 7, lines 39-67.

10. As per claim 13, Leach et al. discloses which further includes the secondary site activating the secondary file system for read/write access once all of the changes to the primary file system that have been transmitted to the secondary file system prior to the disruption have been written into the secondary file system in column 7, lines 39-67.

11. As per claim 14, Leach et al. discloses which further includes the secondary site responding to the disruption by activating the secondary file system for read/write access, and wherein the state of the primary file system at the restart point is the state of the secondary file system when the secondary file system is activated for read/write access in column 6, line 61 – column 7, line 5.

12. As per claim 15, Leach et al. discloses which [further] includes the secondary site keeping a record of changes made to the secondary file system since the restart point, and once the primary site is operative and after writing into the primary file system the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point, writing the changes made to the secondary file system since the restart point into the primary file system in column 7, lines 39-67.

13. As per claim 19, Leach et al. discloses a primary data storage system and a secondary data storage system, the primary data storage system having a primary file system and the secondary data storage system having a secondary file system, the primary data storage system being programmed for read/write access to the primary file

Art Unit: 2113

system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system in column 6, lines 19-35. The asynchronous remote copy of changes is the point-in-time image. The servers and databases disclosed in Figure 5A are also inclusive of file systems as discloses in column 7, lines 32-38.

Leach et al. discloses wherein the secondary data storage system is programmed to respond to the primary data storage system becoming inoperative during the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system by beginning read/write access to the secondary file system, making a snapshot copy of the secondary file system at the beginning of read/write access to the secondary file system, and keeping a record of changes made to the secondary file system during the read/write access to the secondary file system.in column 6, line 61 – column 7, line 5.

Leach et al. discloses wherein the primary data storage system and the secondary data storage system are programmed for recovery when the primary data storage system becomes operative by using the snapshot copy to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun, and then writing into the primary file system the changes made to the secondary file system during the read/write access to the secondary file system, terminating read/write access to the secondary file system, and once the changes made to the secondary file system have been written into the primary file system, restarting read/write access to the primary file system and asynchronous



remote copy of changes made to the primary file system being copied to the secondary file system in column 7, lines 39-67.

14. As per claim 22, Leach et al. discloses wherein the state of the secondary file system existing when read/write access of the secondary file system was begun is a prior state of the primary file system existing before the primary data storage system became inoperative, and wherein the primary data storage system is programmed to keep a list of blocks that have been changed in the primary file system during the read/write access to the primary file system, and to restore the primary file system to the state of the secondary file system existing when read/write access of the secondary file system was begun by accessing the list of blocks that have been changed in the primary file system during the read/write access to the primary file system to determine the blocks that have been changed in the primary file system since said prior state of the primary file system, and copying from the snapshot copy to the primary file system the blocks that have been changed in the primary file system since said prior state of the primary file system in column 6, lines 33-43 and column 7, lines 39-67. The other techniques are inclusive of those that store the updates to the primary site and then replicate to the secondary site.

15. As per claim 29, Leach et al. discloses a primary data storage system and a secondary data storage system, the primary data storage system having a primary file system and the secondary data storage system having a secondary file system, the primary data storage system being programmed for read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system

being copied to the secondary file system, the primary data storage system storing a list of the data blocks that have been changed in the primary file system in column 6, lines 19-35. The asynchronous remote copy of changes is the point-in-time image. The servers and databases disclosed in Figure 5A are also inclusive of file systems as disclosed in column 7, lines 32-38.

Leach et al. discloses wherein the primary data storage system and the secondary data storage system are programmed for recovering from a disruption in the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system by accessing the list of the data blocks that have been changed in the primary file system to restore the primary file system to a prior state at a restart point, the prior state at the restart point including changes made to the primary file system that have been transmitted to the secondary data storage system, the primary file system being restored by determining from the list the data blocks that have been changed in the primary file system since the restart point, and obtaining from the secondary data storage system the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point, and writing into the primary file system the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point in column 6, lines 33-43 and column 7, lines 39-67. The other techniques are inclusive of those that store the updates to the primary site and then replicate to the secondary site. Additionally, a comparison is already being done in Leach et al. to figure out which data is update to date.

16. As per claim 30, Leach et al. discloses wherein the secondary data storage system is programmed to respond to the disruption by making a snapshot copy of the secondary file system at the restart point once all of the changes to the primary file system that have been transmitted to the secondary file system have been written into the secondary file system, and wherein the secondary file system is programmed to obtain from the snapshot copy the data existing at the time of the restart point in the data blocks that have been changed in the primary file system since the restart point in column 7, lines 39-67.

17. As per claim 31, Leach et al. discloses wherein the secondary data storage system is programmed to activate the secondary file system for read/write access once all of the changes to the primary file system that have been transmitted to the secondary file system prior to the disruption have been written into the secondary file system in column 7, lines 39-67.

18. As per claim 32, Leach et al. discloses wherein the secondary data storage system is programmed to respond to the disruption by activating the secondary file system for read/write access, and the state of the primary file system at the restart point is the state of the secondary file system when the secondary file system is activated for read/write access in column 6, line 61 – column 7, line 5.

As per claim 33, Leach et al. discloses wherein the secondary data storage system is programmed for keeping a record of changes made to the secondary file system since the restart point, and wherein the primary data storage system is programmed for writing into the primary file system the data existing at the time of the restart point in the

data blocks that have been changed in the primary file system since the restart point and then writing the changes made to the secondary file system since the restart point into the primary file system in column 7, lines 39-67.

***Claim Rejections - 35 USC § 103***

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claims 2,20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leach et al. in view of Martin et al. (USPN (USPN 6016501A)). As per claims 2,20, Leach et al. fails to explicitly state the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over a data network between the primary site and the secondary site.

Martin et al. discloses this limitation in column 9, lines 42-45.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over a data network between the primary site and the secondary site. A person of ordinary skill in the art would have been motivated to have the asynchronous remote copy of changes

made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over a data network between the primary site and the secondary site because TCP/IP, wherein the IP stands for Internet Protocol, is used to transfer data remotely from one storage system to another storage system.

21. Claims 5,23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohran in view of Wikipedia. As per claim 5, Ohran discloses in response to the primary site becoming inoperative during the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system, beginning read/write access to the secondary file system in column 7, lines 44-57.

Ohran also discloses in response to the primary site becoming operative, synchronizing the primary file system to the secondary file system by beginning asynchronous remote copy of changes made to the secondary file system being copied to the primary file system, making a snapshot copy of the secondary file system at the beginning of the asynchronous remote copy of changes made to the secondary file system being copied to the primary file system, synchronizing the primary file system to the snapshot copy of the secondary file system, and once the primary file system has been synchronized to the snapshot copy of the secondary file system, terminating read/write access to the secondary file system and completing the asynchronous remote copy of changes made to the secondary file system being copied to the primary file system; and once the asynchronous remote copy of changes made to the secondary file system has been completed, restarting the read/write access to the primary file

system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system in column 7, line 66 – column 8, line 13.

Snapshot is asynchronous remote copy. The primary site being operative is when the primary site cannot access a data block. The primary site becomes operative when after recognizing the data block cannot be accessed, a request is made to the backup site.

Ohran discloses primary and secondary storage devices.

Ohran fails to explicitly state file system.

Wikipedia discloses this limitation on page 1.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have file system. A person of ordinary skill in the art would have been motivated to have file system because file systems can be stored on storage devices.

22. As per claim 23, Ohran et al. discloses a primary data storage system and a secondary data storage system, the primary data storage system having a primary file system and the secondary data storage system having a secondary file system, the primary data storage system being programmed for read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system in Figure 1.

Ohran discloses wherein the secondary data storage system is programmed to respond to the primary data storage system becoming inoperative during the asynchronous remote copy of changes made to the primary file system being copied to

Art Unit: 2113

the secondary file system by the secondary data storage system beginning read/write access to the secondary file system, in column 7, lines 44-57.

Ohran discloses wherein the primary data storage system and the secondary data storage system are programmed to respond to the primary data storage system becoming operative by synchronizing the primary file system to the secondary file system by beginning asynchronous remote copy of changes made to the secondary file system being copied to the primary file system, making a snapshot copy of the secondary file system at the beginning of the asynchronous remote copy of changes made to the secondary file system being copied to the primary file system, synchronizing the primary file system to the snapshot copy of the secondary file system, and once the primary file system has been synchronized to the snapshot copy of the secondary file system, terminating read/write access to the secondary file system and completing the asynchronous remote copy of changes made to the secondary file system being copied to the primary file system; and once the asynchronous remote copy of changes made to the secondary file system has been completed, restarting read/write access to the primary file system and asynchronous remote copy of changes made to the primary file system being copied to the secondary file system in column 7, line 66 – column 8, line 13. Snapshot is asynchronous remote copy. The primary site being operative is when the primary site cannot access a data block. The primary site becomes operative when after recognizing the data block cannot be accessed, a request is made to the backup site.

Ohran discloses primary and secondary storage devices.

Ohran fails to explicitly state file system.

Wikipedia discloses this limitation on page 1.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have a primary file system and a secondary file system. A person of ordinary skill in the art would have been motivated to have a primary file system and a secondary file system because file systems can be stored on storage devices.

23. Claims 6,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohran in view of Wikipedia in further view of Martin et al. As per claims 6,24, Ohran and Wikipedia fail to explicitly state the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over a data network between the primary site and the secondary site.

Martin et al. discloses this limitation in column 9, lines 42-45.

Accordingly, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over a data network between the primary site and the secondary site. A person of ordinary skill in the art would have been motivated to have the asynchronous remote copy of changes made to the primary file system being copied to the secondary file system includes using the Internet Protocol to transmit the changes made to the primary file system over



a data network between the primary site and the secondary site because TCP/IP, wherein the IP stands for Internet Protocol, is used to transfer data remotely from one storage system to another storage system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yolanda L. Wilson whose telephone number is (571) 272-3653. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Yolanda L Wilson  
Examiner  
Art Unit 2113

